

New North American Grasses.

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WITH PLATES XI-XIII.

Avena Mortoniana, sp. nov. — Gramen humile, caespitosum alpinum, perenne, 4-6-pollicare, paniculis paucifloris, 1-2-pollicaribus. Culmi erecti, rigidi, striati, glabri; vaginæ glabræ vel minute pubescentes superne; ligula plus minus semi-linealis, decurrens, lamina 4-6-pollicaris, lineam lata vel angustior, rigida, convoluta siccitate, subtus glabra, supra pubescens, minute scabra marginibus. Rami paniculæ singuli vel geminati, breves, erecti, 1-3 spiculas ferentes. Spiculæ plus minus 5 lineas longæ, bifloræ, flos secundus densissime hirsuto articulo rachillæ elevatus, plerumque imperfectus vel rudimentum, interdum omnino nullus, pedicella sola manente; glumæ vacuæ flosculos excedentes, lanceolato-acutæ, prima uninervis, secunda quam prima paulo longior, trinervis; gluma florens floris perfecti 4-4½ lineas longa, glabra vel superne scabriuscula, firmomembranacea præter per margines scarios apicemque, dorso aristata prope medium; arista inferne contorta, geniculata, scabra, 7-8 lineas longa; callus basi glumæ floris densissime pilosus, pilis sublinealibus; palea glumam æquans fere, lanceolata, carenis minute subdenseque ciliatis in dimidio superiore. — *Tab. XI.*

Allied to *Avena Hookeri* Scribn., from which it is distinguished by its smaller habit, shorter panicle, smaller and fewer flowered spikelets, longer bearded callus, and more densely plumose prolongation of the rachilla.

Mountain summits near Silver Plume, Colo., altitude 13,000-14,000^{ft.} August. Nos. 697 *C. L. Shear* and 2,439 *P. A. Rydberg*, 1895. Rydberg's specimens were collected on Gray's Peak. Named for Hon. J. Sterling Morton, secretary of agriculture, in recognition of his interest in the promotion of the science of agrostology.

Danthonia Parryi, sp. nov. — Gramen erectum, subgracile, perenne, 1-2-pedale, vaginis marcidis culmos basi amplexantibus. Vaginæ glabræ præter fauces, internodis breviores sed plerumque laminas superantes; ligula annulus breve ciliatus; laminæ 2-4 pollicēs longæ summæ plerumque breviores,

innovationum hanc longitudinem excedentes, circa sesquilineam latæ, sensim in apices longiusculos filiformesque attenuatæ, minute scabræ per margines et nervo supra. Panícula simplex, 3-7 spiculis, axe commune pedicellisque subcompressis, scabrisque; spiculæ plus minus decem lineas longæ, 5-7-floræ; glumæ vacuæ membranaceæ ovato-lanceolata, acutæ, trinerves aut basi 5-7-nerves, subaequales, flosculos paullo superante; glumæ florentes quam vacuæ paullo firmiores, plus minus 7 lineas longæ, ovata, plerumque 11-nerves basi, trinerves superne, dorso marginibusque longiuscule sericeo-pilosæ, apice dentibus aristato-acutis. Callus longiusculus, lateribus dense barbatus. Arista 6-7 lineas longa, robusta, inferiore parte plana, laxè contorta, pallidestraminea, superiore attenuata, plus minus scabra. Palea plus minus 5 lineas longa late-ovata, brevissime ciliata per margines et apice acute bidentata.

This species has been referred both to *Danthonia sericea* Nutt. and *Danthonia intermedia* Vasey. It is distinguished from the former by the glabrous sheaths and leaves and more simple and strict inflorescence, fewer and larger spikelets, broader less acuminate and glabrous empty glumes, flowering glumes hairy upon the back as well as the margin, and stouter awns. It differs from *Danthonia intermedia*, to which it is more nearly allied, by its more robust growth, usually fewer and much larger spikelets, comparatively narrower empty glumes and more copiously hairy flowering glumes (in *Danthonia intermedia* the flowering glumes are hairy only along the margins); the teeth of the flowering glumes are also much longer, and the awn about twice as long.

My attention was first called to this species by some specimens collected by Dr. Parry in Colorado. It equals no. 2,397 *Rydberg*, collected in the valley about three miles north of Georgetown, Colo., August 19, 1895. It was distributed by E. Hall in 1862. No. 1,170-1 *J. Wolfe*, collected at Twin Lakes, Colo., appears to be the same thing, with much elongated leaves, and rather more numerous flowered panicles. The leaves in this form exceed a foot in length, and it may be designated as var. *longifolia*.

Zeugites smilacifolia, sp. nov.—Planta perennis; culmi validiusculi, simplices, 3-5-pedales, glabri, fusci, nitidi; vaginæ purpurescentes minutissime scabræ, pilis paucis papillatis superne juxta margines. Folia glabra, petiolata, inferiora

remota, superiora approximata, usque ad 4 pollices longa, $2\frac{3}{4}$ pollices lata, basi subcordata, apice acuta, nervis primariis 11-13, arcuatis, venulis transversis inter se anastomosantibus utrimque distinctis; petioli graciles $\frac{1}{2}$ - $1\frac{1}{4}$ pollices longi, basi pulvinis distinctis, apice pubescentes. Panicula 4 pollices longa, laxe patens, paucispiculata, ramis gracilibus inaequalibus plerumque geminatis. Spiculæ virides 3- $3\frac{1}{2}$ lineas longæ. 2-3-floræ; glumæ vacuæ inaequales, prima paulo linea longior, latior quam longa, inaequaliter dentata, saepe 7-nervis, venulis transversis connectis, marginibus minute ciliolata; gluma secunda oblonga, truncata, quam prima brevior multoque angustior, 1-3-nervis, venulis transversis, apice lata minute ciliolata, flosculus femininus articulo racheos $\frac{1}{2}$ lineam longo elevatus. Gluma florens feminina, 2 lineis paulo brevior, dorsi scabra, basi gibbosa, apice late truncata inaequaliterque dentata, marginibus minute ciliolata, 9-11-nervis venulis connectis. Palea angustissima, glumam aequans, carinis apiceque dense pubescentibus. Gluma florens mascula, oblonga, dorso scabra, apice lata rotundata, 5-7-nervis, angusta palea paulo brevior.—*Tab. XII.*

Faucibus, prope Cuernavaca, Morelos civitate. 20 Nov. (Pringle n. 5,961.)

The leaves of this well-marked species resemble in outline and venation those of some species of smilax. The false petioles consist of two parts, one an evident continuation of the leaf-sheath which occupies the greater part, and an upper pubescent part, which is manifestly a petiole-like downward extension of the blade. From this latter part arise the eleven to thirteen primary nerves, like so many rays. The limits of these two parts of this false petiole are quite sharply defined, but there does not appear to be any point of articulation between them. The pulvini at the base of the pseudo-petioles cause the leaves to diverge.

The material in the National Herbarium does not permit a comparison with all the published species, and unfortunately the descriptions of some of the species are too brief to be of much value as means of identification. I present below a description of the genus *Zeugites*, and, as far as I am able from the specimens and publications, a brief characterization of the species. *Zeugites Munroana* Hemsl., from Guatemala, Hemsl. himself refers to *Z. Galeottiana*. In the Index Kewensis *Zeugites Americana* Rupr., not Willd., is referred to *Z.*

Mexicana, and *Z. Jamaicensis* Rausch is referred to *Z. Americana* Willd. I think it very likely that *Z. colorata* Griseb., and *Z. Hartwegi* Fourn., are not distinct from *Z. Americana* Willd.

ZEUGITES Schreb.—Spiculæ 3–8-floræ, paniculatæ, flore inferiore femineo superioribus masculis. Glumæ 2 inferiores vacuæ latissimæ, apice rotundatæ vel truncatæ, saepe subdentatæ, inter nervos saepius transversim venulosæ; tertia florem fertilem fovens vacuis similis nisi paullo major; superiores 2–7-flores masculos foventes angustiores, venulis transversis raris; palea angusta, hyalina, 2 carinata.—Gramina nunc debilia basi decumbentia ramosa, nunc elatiora valida, foliis planis petiolatis vel sessilibus, ovatis vel ovato lanceolatis inter venas transverse venulosis. Panicula terminalis, nunc laxa effusa, spiculis paucis nutantibus, nunc dense floribunda. (Char. ex Benth. et Hook. Gen. Pl. 3: 1191.)

Spiculæ 6–10-floræ.

Z. latifolia Hemsl. Biol. Centr. Am., Bot. 3: 577.

Krombholzia latifolia Fourn. Mex. Pl. Enum., Gram. 122. (Leibm. n. 541).

Planta robusta, culmo valido, foliis subsessilibus, late cordatis, lanceolatis, 4-pollicaribus. Panicula pedalis fere, spiculis lævibus 5-lin. longis, 8–10-floris.

Z. Galeottiana Hemsl. l. c.

Krombholzia Mexicana Rupr. in Bull. Acad. Roy. Brux 6:—[n. 8.] (Galeotti n. 5,751).

Planta pusilla, foliis parvis, cordato ovatis, breviter petiolatis; panicula depauperata 3–4-spiculata; spiculæ 7-floræ, glumis vacuis parvis inequalibus, integris.

Spiculæ 2–4-floræ.

Z. Americana Willd. Sp. Pl. 4: 204.

Apluda Zeugites L.

Culmi 1–2-pedales. Folia ovata, acuta 1–2 pollices longa, 6–10 lineas lata; petiolis glabris. Paniculæ rami inferiori ternati. Gluma florens femina aristata; arista erecta, glumæ dimidiam longitudine vel paulo brevior. Spiculæ 3-floræ, floribus masculis distantibus.

Z. Hartwegi Fourn. l. c. 121.

Despretzia Mexicana Benth. non Kth. (Hartweg no. 569).

Planta gracilis ramosa, pedalis vel ultra. Panicula pauci-

spiculata; spiculis 3-4-floris glumis vacuis dentatis, pubescenti-ciliatis, gluma florens femina apice mucronata. Vide supra.

Z. Mexicana Trin. ex Steud. Nom. 2: 798. [ed. 2].

Despretzia Mexicana Kunth Revis. Gram. 2: 485. pl. 157.

Culmi graciles caespitosi, basi ramosi, repentes, geniculato-erecti. Folia ovata acuta, basi rotundata, petiolata. Paniculae ramosae depauperatae patentissimae. Spiculae 3-4-florae longe pedicellatae cernuae, lanceolatae, virides. Glumae vacuae glabrae, longitudine subequales; gluma florens femina mutica.

Z. colorata Griseb. Flor. Br. W. Ind. 536 in obs.

Folia oblongo-lanceolata; petioli apice pubescentes; gluma florens femina breviter mucronata. Vide supra.

Z. smilacifolia Scribn.

Planta validiuscula. Culmi 3-4-pedales, simplices. Folia petiolata, usque ad 4 pollices longa, $2\frac{3}{4}$ pollices lata, petiolis apice pubescentibus. Panicula laxa, sub 4-poll. longa, paucis spiculis. Glumae vacuae inequales, dentatae, scabrae, marginibus ciliatae. Spiculae 3-florae, 2-3 lin. longae. Gluma florens femina latissima, mutica, dorso scabra, marginibus ciliata.

Pringleochloa, gen. nov. Tribus CHLORIDEÆ Benth. et Hook. Gen. Plant. 3: 1087.—Spiculae monoicae, dense biserialiter imbricatae per latus racheos continuæ, complanatae, ultra summam spiculam excurrentis. Spiculae masculae femininis dissimiles. Spiculae masculae uniflorae, rhachilla ultra florem in stipitem minimum producta; glumae vacuae 2, valde inaequales, prima quam secunda multo minor, uninerves, muticae; gluma florens 3-nervis, apice breviter tridentata, glabra; palea glumam aequans 2-nervis; stamina 3, pistillus nullus; spiculae femininae uniflorae, glumis vacuis rudimentis multiaristatis 2-3 supra floram; glumae vacuae inferiores 2, valde inaequales, prima quam secunda brevior et multo angustior; gluma florens 3-nervis, aristis brevibus 3 inter dentes apicis; palea glumam aequans; stamina nulla, styli distincti, stigmata longe plumosa.

Gramen humile, perenne, stoloniferum, ramis gracilibus ascendentibus, foliisque brevibus subrigidis.

Dedicated to Mr. C. G. Pringle, who for many years has

been collecting plants in our southwestern states and territories and in Mexico, and who has, perhaps, done more towards increasing our knowledge of the plants of these regions than any other collector.

Pringleochloa stolonifera, nom. nov.—Culmi stoloniferi ramis floriferis erectis vel ascendentibus 2–6 pollices altis. Spicæ masculæ 3–6, approximatae, 8–20 spiculatae ex vagina summa longe exsertæ, infima circa $\frac{1}{2}$ pollices longa, superioribus deinceps sensim brevioribus, spiculæ dense imbricatæ, subsessiles, basi pubescentes, circa 2 lineas longæ; gluma prima angustissime lanceolata, apice subulata, circa $1\frac{1}{2}$ lineas longa, secunda multo latior, glumam florentem subaequans. Spicæ femininæ 3–4 per axes communes breves confertæ, 4–6 spiculatae, infima saltem in vagina summa inclusa; spiculæ cum aristis florum rudimentorum $3\frac{1}{2}$ lineas longæ; gluma prima setiformis, prope $1\frac{1}{2}$ lineas longa, parce et breviter pilosa; secunda lanceolata, quam prima longior, dorso sericeo-villosa, apice minute bifida, nervo medio valido in mucronem brevem aristiformem inter dentes excurrente, flosculi rudimenta plerumque 2–3, ad glumas vacuas inaequaliter aristatas reducti, stipitibus brevibus vel articulis rachillæ elevati.—*Tab. XIII.*

Thinly carpeting, here and there, the calcareous plains around Tehuacan in eastern Puebla, a region rendered arid by its situation on the west side of the mountain chain connecting Mt. Orizaba with the mountains of Oaxaca. (Pringle, no. 6, 280.)

This singular grass is closely related to *Bouteloua*, but possesses a remarkably composite line of characters. It is monocious like *Buchloe*, and, like that grass, has the staminate spikes raised on the taller upright branches of the culm and long-exserted, while the female spikes are almost concealed among the leaves at the base of the tufts, and are at least partially enclosed within the inflated leafsheaths. The appearance of the staminate inflorescence very closely resembles that of *Dinebra chondrosioides*, as figured in HBK. Nov. Gen. Plant. 1: pl. 53. The spikelets, however, are strictly 1-flowered and staminate, and the prolongation of the rachilla behind the palea is a short bristle, and does not extend into a 3-awned rudiment. The pistillate spikelets agree in many respects with those of *Eutriana multiseta* Nees; they are very densely crowded on the short partial rachis, and appear as

flabelliform clusters, but the awns of the flowering glume are much shorter, as are also the more numerous awns of the rudimentary florets above. These multi-awned glumes also suggest a relationship with *Cottea* and *Pappophorum*.

I have very little doubt of the identity of the species here described with *Atheropogon stolonifer* Fourn., the characters of which, as given by Fournier (Mex. Pl. Enum., Gram. 140), would apply to specimens bearing only female spikes. He describes the spikelets as hermaphrodite, but he may have too hastily assumed this, and overlooked their strictly unisexual character. Fournier's specimens, (Liebman no. 588) were collected in the same region, a fact which renders the identity still more probable.

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EXPLANATION OF PLATES XI-XIII.

Plate XI. Avena Mortoniana Scribner.

Plate XII. Zeugites smilacifolia Scribner.

Plate XIII. Pringleochloa stolonifera Scribner.

Fig. *a*. Staminate spikelet, showing the back of the second glume, etc. Fig. *b*. Empty glumes of the staminate spikelet, more highly magnified. Fig. *c*. Lower part of the staminate floret, showing the short continuation of the rachilla behind the palea. Fig. *d*. Apex of the flowering glume of the staminate spikelet. Fig. *e*. First glume of the pistillate spikelet. Fig. *f*. Second glume of the same. Fig. *g*. Pistillate spikelet, dorsal view, empty glumes removed. Fig. *h*. Palea of the female floret. Fig. *i*. Fourth glume of the pistillate spikelet. The glumes above these have successively fewer arms. Fig. *k*. Rachis, to which were attached three female spikes.